Research Trends and Results

Determination of Degradation Conditions based on Actual Survey for Demolished Buildings

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1.   Introduction

This research determines the situation of degradation/damage and defects or the like of existing detached timber housing according to actual surveys targeting demolition cases, attributes of building (date of construction, location environment, formulation of each part or the like) and arranges relationships between emergence trends and locations of degradation, damage or the like, and on that basis, aims to develop a simple inspection method for their current state contributing to rational comprehension of the current state of existing housing.

This paper introduces knowledge, analyses and so on obtained through surveys for demolition/reform objects of detached timber housing implemented up until now.

2. Content of research

(1) Improvement of actual example data in respect to degradation and damage of existing detached timber housing

According to a survey for demolished buildings or the like, with the emergence of sites of degradation phenomenon in detached timber housing, we consolidate actual example data with reference to conditions of decay/damage or the like to members inside the structure. By conducting actual condition surveys for existing detached timber housing and so forth built in each district throughout the nation, we will take into account not only effects on degradation by difference in climate conditions , but also the location of housing and methods of use, to consolidate data with respect to degradation and damage occurring to detached timber housing.

(2) Guideline of current condition inspection method for existing detached timber housing

Based on the actual example data obtained in (1), by focusing attention on degradation phenomenon affecting housing performance, we shall establish a current condition inspection method to efficiently and rationally grasp the conditions of gradation/damage. Specifically, a guideline for the actual state inspection method from variations of appearance to be confirmed by visual inspection, occurrence of degradation/damage or the like in parts difficult to visually look into such as the interior

of walling bodies shall be configured based on actual example data to give estimates with a certain level of accuracy. In addition, in regard to parts with high occurrence risks, a guideline of the actual state inspection method capable of being induced so as to confirm the occurrence of degradation/damage or the like by concentrated current state inspections and detailed inspections and so on shall be configured.

3. Survey results

Prior to initiation of demolition work, by carrying out current state visual inspection for variations such as cracks and rain infiltration, discoloring or the like, and on that basis, carrying out investigation on the degradation of interior members such as decay, damage, harm caused by termites or the like after the demolition of the finished materials. In accordance with this, we tried to comprehend variations in parts capable of visual inspection and the actual state of interior degradation/damage and their relationship. As a result, we were able to detect degradation phenomena not previously assessable in the current state surveys such as in in water areas like the bathroom, toilet and so forth. Through these results, the current state survey incorporates a method to determine the general current state in assumption/consideration and through a trial of survey methods combined with degradation surveys, which carry out actual determination of degradation/damage or the like. Through this, we have consolidated the guideline of the current state inspection method, and deliberated on this so that the surveys in the future can be smoothly carried out and the survey results efficiently collected.

Photo 1: Implemented situation of current state survey

Photo 2: Implemented situation of degradation survey

Table: Type of relationship between changes and degradation

	Current state survey	Degradation survey	Assumed case
1	With changes	With degradation	・A case of emerging deformation (inclination, etc.) due to structural materials with considerable degradation ・A case where degradation was assumed to emerge affected by degradation factors (moisture, termites, etc.), due to occurrence of cracks or the like.
2	Without changes	With degradation	・A case where detection cannot be made by inspection due to an unchanged appearance, even though degradation of structural materials has advanced
3	With changes	Without degradation	・A case where structural materials have not been degraded, even though changes are detected in the appearance.